

Title (en)  
Tube and fin assembly for heat exchangers in power plants

Title (de)  
Rohr- und Flügelzusammenbau für Wärmeaustauscher in Kraftwerken

Title (fr)  
Assemblage tube-ailettes pour échangeurs thermiques de centrales

Publication  
**EP 0417894 B1 20000531 (EN)**

Application  
**EP 90308110 A 19900725**

Priority  
US 40606489 A 19890912

Abstract (en)  
[origin: EP0417894A2] Potential difficulties with corrosion resistance in air cooled condensers utilizing aluminum fins are avoided by using fin and tube constructions made by a method which includes the steps of providing a flattened tube (50) of ferrous material (80) and having an exterior coating (82) predominantly of aluminum; providing at least one serpentine fin (56) of aluminum (86) and clad with a predominantly aluminum braze cladding (88); assembling (102) the fin (56) to the flattened tube (50); applying (94), (100), (104), a brazing flux to at least one of the fin (56) and the tube (50); raising (106) the temperature of the assembly to a level sufficient to at least partially melt the braze cladding (88); and maintaining the temperature for a sufficient Period of time to achieve a brazed joint (60) between the fin (56) and the tube (50) but a time insufficient to convert the coating (82) and the cladding (88) to ferrous-aluminum intermetallic compound or intermediate phase.

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**B23K 1/00**

IPC 8 full level  
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Citation (examination)  
• W. HUFNAGEL: "Aluminium Taschenbuch", 1 March 1988, ALUMINIUM-VERLAG, DÜSSELDORF  
• W.G.BADER ET AL: "Aluminium Brazing Handbook", 1 January 1971, THE ALUMINIUM ASSOCIATION, NEW YORK

Cited by  
EP0947794A1; EP1440759A1; EP0823296A3; EP4066955A1; EP0947795A1

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